Bond evaluation of environmentally conditioned GFRP/concrete systems

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Abstract: The objective of this study is to establish the effect of accelerated environmental conditioning on the pull-out behavior of glass/vinylester FRP reinforced concrete systems and to relate these effects to observed physico-mechanical properties of the reinforcement rods. Three rod types with different surface configurations were used in this study. Environmental conditioning consisted of immersing the FRP/concrete specimens in a solution with high pH and temperature for 28 days. Tests such as FRP/concrete direct pull-out, FRP sonic resonance, and FRP short beam shear strength were carried out. Considerable reductions in bond strength and FRP mechanical properties were observed in all rod types.